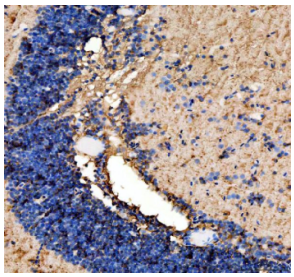
Zebrafish Ago4 Antibody / Argonaute 4 (RZ1001)

Catalog No.	Formulation	Size
RZ1001	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

Availability	2-3 weeks
Species Reactivity	Zebrafish
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	Antigen affinity chromatography
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	K4IAH1
Localization	Cytoplasm
Applications	Immunohistochemistry (FFPE) : 2-5 ug/ml
Limitations	This Zebrafish Ago4 antibody is available for research use only.



Immunohistochemical analysis of Zebrafish Ago4 using Zebrafish Ago4 antibody and zebrafish cerebellum tissue. HIER: steam section in pH8 EDTA buffer for 20 min.

Description

Zebrafish (Danio rerio) Ago4 antibody recognizes Argonaute 4, a member of the Argonaute protein family that mediates small RNA guided gene regulation in Danio rerio. Argonaute proteins are central components of the RNA induced silencing complex and play essential roles in microRNA and small interfering RNA pathways. Zebrafish Ago4 is encoded within a conserved Argonaute gene cluster on chromosome 13 and contributes to post transcriptional control mechanisms that support early embryogenesis, germline specification, and lineage differentiation. Ago4 localizes to the cytoplasm,

perinuclear ribonucleoprotein granules, and RNA processing hubs where it associates with small RNAs, RNA binding proteins, and enzymatic factors involved in mRNA turnover and translational repression.

Argonaute 4 binds guide RNAs through its PAZ and PIWI domains and directs regulatory complexes to complementary mRNA targets. Depending on complementarity and associated cofactors, Ago4 can promote translational inhibition, controlled mRNA destabilization, or targeted mRNA cleavage. These regulatory events shape transcriptional networks that govern axis formation, somitogenesis, neural patterning, and organogenesis in zebrafish embryos. Ago4 functions alongside other Argonaute paralogs, yet zebrafish studies suggest distinct spatial and temporal patterns of expression that may reflect specialized roles during early tissue specification and morphogenesis.

Zebrafish Argonaute proteins, including Ago4, also contribute to germline formation and maintenance. Cytoplasmic granules enriched in Ago proteins coordinate stability and localization of RNAs required for germ cell lineage determination. Ago4 may co-localize with processing bodies and stress granules, linking microRNA activity with broader mechanisms of mRNA triage and storage. Isoform diversity generated through alternative transcriptional start sites or splicing events could affect subcellular distribution or binding characteristics, though the canonical isoform dominates during critical stages of zebrafish embryonic development.

Disruption or misregulation of small RNA pathways, including Ago4 function, can impair zebrafish development by destabilizing gene expression programs. Experimental models have demonstrated that altered Ago activity can lead to aberrant neural patterning, cardiac malformation, craniofacial defects, and dysregulated metabolic signaling. Because zebrafish embryos provide a transparent and genetically tractable system, Ago4 has become an important target for studying microRNA dependent processes, environmental toxicology, and epigenetic inheritance mechanisms. Its involvement in small RNA pathways also links it to emerging research surrounding stress adaptation and developmental plasticity.

This Zebrafish Ago4 antibody is suitable for detecting Argonaute 4 in research focused on microRNA pathways, RNA induced silencing, embryonic patterning, germline specification, and post transcriptional regulation in zebrafish. It supports studies examining RNA granule dynamics, lineage commitment, small RNA driven developmental processes, and molecular responses to environmental or genetic perturbation. NSJ Bioreagents provides this reagent as part of its zebrafish and developmental biology antibody portfolio.

Application Notes

Optimal dilution of the Zebrafish Ago4 antibody should be determined by the researcher.

Immunogen

An E.coli-derived zebrafish Ago4 recombinant protein (amino acids K116-L161) was used as the immunogen for the Zebrafish Ago4 antibody.

Storage

After reconstitution, the Zebrafish Ago4 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.